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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/843,287	04/24/2001	Ramarathnam Venkatesan	MSI-794US	7805

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EXAMINER

JOHNS, ANDREW W

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/843,287

Applicant(s)

VENKATESAN ET AL.

Examiner

Andrew W. Johns

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 38-45 and 48 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30,32-34,36 and 37 is/are allowed.
- 6) ☒ Claim(s) 1-4,7-18,21-29,31,35,46 and 47 is/are rejected.
- 7) ☒ Claim(s) 5,6,19 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.5.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (claims 1-37 and 46-47) in the reply filed on 04 June 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (M.P.E.P. § 818.03(a)).

2. Claims 38-45 and 48 are withdrawn from further consideration pursuant to 37 C.F.R. § 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 04 June 2004. Applicant's indication that claims 38-45 and 48 are cancelled (page 2 of the response) is acknowledged. However, the response did not include an amendment in compliance with the requirements of 37 C.F.R. § 1.121, so the cancellation of these claims has **not** been entered, and these claims remain pending and withdrawn from consideration.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title should mention the distinctive feature(s) of the claimed invention.

Claims

5. Claims 1, 17 and 46 each includes a number of occurrences of small font size text, that appear to be formatting instructions that should not appear in the printed claims. Specifically, it

Art Unit: 2621

is suggested that applicant delete “relativelone one” at line 6 of claim 1 and line 8 of claim 46, as well as “relative” at line 8 of claim 1, lines 3 and 4 of claim 17, and line 10 of claim 46. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 23-26 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation of “the information pattern” at line 2 of claim 23 is indefinite because no such information pattern is previously recited or defined in the claim language, so that it is unclear what pattern is referred to and further defined by this claim language. Therefore, the metes and bounds of the claim cannot be readily determined and the claim fails to specifically point out applicant’s invention. Similarly, the recitation of “the relative intensity of information pattern” at line 2 of each of claims 24, 25 and 26 is similarly unclear, because no such relative intensity is recited or defined by the preceding claim language, and it is unclear how this language modifies the previously recited invention.

Claim Rejections - 35 U.S.C. § 101

8. 35 U.S.C. § 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 13, 27, 31, and 35 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

Claims 13, 27, 31, and 35 each define a "video signal" generated in accordance with the method of the various independent claims. A video signal is descriptive material, which is statutory subject matter if it is both functional and recited as being embodied in a computer-readable storage medium (see M.P.E.P. § 2106). As pointed out in M.P.E.P. § 2106, descriptive material is either functional (i.e., it imparts functionality on a general purpose computer system, such as computer programs or a specific data structure) or non-functional (which does not impart any specific functionality on a general purpose computer). Non-functional descriptive material can never be considered statutory, while functional descriptive material is only considered statutory when recited as embodied in a computer-readable storage medium.

The video signal variously defined in each of these claims does not impart any specific functionality on a general purpose computer, so that these signals are considered to be non-functional descriptive material and are therefore not statutory subject matter. Even if these video signals were considered to be functional, the claims do not define the signal as embodied on a computer-readable storage medium, so that the signals would still not be directed towards statutory subject matter.

Claim Rejections - 35 U.S.C. § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2621

11. Claims 1-4, 13-15 and 46-47 are rejected under 35 U.S.C. § 102(b) as being anticipated by Echizen et al. (Article entitled "General Quality Maintenance Module..." from *IEEE Trans. on Consumer Electronics*).

Echizen et al. teaches a method for facilitating the insertion of information into a video signal (shown generally in Figure 1, for example), including embedding an information pattern (i.e., copy control information; see second sentence of section 1: Introduction on page 1150) in one or more regions of the video signal, a region comprising a plurality of successive frames (second sentence of section 2 on page 1150; the watermarks are embedded into *each* frame); wherein, for one or more regions, the information pattern is embedded into a frame of a region with a relative degree of intensity (i.e., the amount of luminance change due to the watermark embedding; see page 1151, first column, section entitled "Watermark Strength") and one or more frames of that region have the patterns embedded therein which have a relative intensity that differs from the relative intensity of the pattern embedded in other frames of the region (the watermarking strength varies from frame to frame; page 1152, first column, first sentence in the section titled "(2) Quality maintenance peculiar to motion pictures"), as variously stipulated by claims 1 and 46. In addition, Echizen et al. also teaches that the information pattern is a watermark (second sentence of section 2 on page 1150; the watermarks are embedded into *each* frame), as further required by claims 2 and 47; locating one or more regions of the video signal for embedding an information pattern therein (blocks are selected; page 1155, first column, first sentence in the section entitled "Proposed method (GQM)"), as additionally defined by claims 3 and 46; and that the locating be random (page 1155, second column, section entitled "Random method"), as further set forth in claim 4. Finally, Echizen et al. also teaches a modulated video signal generated in accordance with the method (i.e., the watermarked pictures shown in Figure

Art Unit: 2621

1), as required by claim 13; a computer and computer readable medium having computer executable instructions that, when executed by the computer, performs the method (page 1156, second column, line 7 in section 4.3; the method is implemented for general purpose computers which inherently include the computer-readable storage medium and appropriate program instructions in order to properly operate to perform the method), as further required by claims 14 and 15. Therefore, Echizen et al. meets each of the limitations of these claims and anticipates the claimed invention.

Claim Rejections - 35 U.S.C. § 103

12. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 9, 12, 16-18, 23 and 26-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Echizen et al. as applied to claims 1-4, 13-15 and 46-47 above, and further in view of Powell et al. (EP 0 581 317 A2).

While Echizen et al. meets a number of the limitations of claims 16-18 and 27-29, as pointed out more fully above with respect to claims 1-4, 13-15 and 46-47, Echizen et al. fails to specifically teach that the information pattern is embedded into a frame or region in a plateau-shaped manner, as further stipulated by claims 9, 16 or 23, or that the relative intensity of the information pattern embedded is a gradient, as additionally required by claims 12 and 26.

Powell et al. teaches embedding information (i.e. "a signature"; page 2, line 27) into images, using a relative intensity (page 4, lines 43-45) that is a gradient (page 4, lines 45-47).

Art Unit: 2621

This gradient provides an approximate plateau-shape embedding (i.e., a “continuous transition” to a new value; page 4, line 47). Because this continuous transition makes the embedded information pattern less perceptible to a human viewer of the image, it would have been obvious to one of ordinary skill in the art to use such gradient relative intensity to embed the information pattern in Echizen et al.

14. Claims 7-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Echizen et al. as applied to claims 1-4, 13-15 and 46-47 above, and further in view of Fridrich et al. (Article entitled “Robust Hash Functions for Digital Watermarking” from the *Int. Conf. on Information Technology: Coding and Computing*).

While Echizen et al. meets a number of the limitations of the claimed invention, as pointed out more fully above, Echizen et al. fails to specifically teach determining hash values of one or more frames of one or more regions of the video signal and persisting the hash values with an association with the video signal, as variously required by claims 7-8.

Fridrich et al. teaches embedding an information pattern (i.e., a digital watermark; page 179, first sentence in section 2) in a video signal (first sentence of the second paragraph of section 2, on page 179), including determining hash values of the frames of the video signal (section 4, pages 180-181) and persisting the hash in the video signal (section 6, page 182). Because the use of hash values in digital watermarking provides for better authentication and integrity of the video data (see the conclusion beginning on page 182), it would have been obvious to one of ordinary skill in the art to use such hash values in the Echizen et al. embedding.

Art Unit: 2621

15. Claims 21-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Echizen et al. and Powell et al. as applied to claims 9, 12, 16-18, 23 and 26-29 above, and further in view of Fridrich et al.

While Echizen et al. and Powell et al. each variously meets a number of the limitations of the claimed invention, as pointed out more fully above, Echizen et al. and Powell et al. each fails to specifically teach determining hash values of one or more frames of one or more regions of the video signal and persisting the hash values with an association with the video signal, as variously required by claims 21-22.

Fridrich et al. teaches embedding an information pattern (i.e., a digital watermark; page 179, first sentence in section 2) in a video signal (first sentence of the second paragraph of section 2, on page 179), including determining hash values of the frames of the video signal (section 4, pages 180-181) and persisting the hash in the video signal (section 6, page 182). Because the use of hash values in digital watermarking provides for better authentication and integrity of the video data (see the conclusion beginning on page 182), it would have been obvious to one of ordinary skill in the art to use such hash values in the embedding of Echizen et al. and Powell et al.

16. Claims 10-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Echizen et al. as applied to claims 1-4, 13-15 and 46-47 above, and further in view of Wu et al. (Article entitled "Video Access Control Via Multi-level Data Hiding" from *IEEE Int. Conf. on Multimedia and Expo*).

While Echizen et al. meets a number of the limitations of the claimed invention, as pointed out more fully above, Echizen et al. fails to specifically teach that the relative intensity of

Art Unit: 2621

the embedding into a group of successive frames is substantially identical or approximately similar, as variously required by claims 10-11.

Wu et al. teaches embedding an information pattern in video data (lines 1-3 in section 2.1 on page 381), wherein the relative intensity of the embedding is substantially the same or approximately similar for a plurality of successive frames (i.e., seg. i or seg. i+1 shown in Figure 1, for example; see the second paragraph in section 2.1 on page 381; the same data is hidden in each frame of a segment). Because this reduces frame jittering (first sentence of the second paragraph of section 2.1), it would have been obvious to use the same or similar relative intensity to embed information into successive frames to reduce such jittering in the Echizen et al. embedding.

17. Claims 24-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Echizen et al. and Powell et al. as applied to claims 9, 12, 16-18, 23 and 26-29 above, and further in view of Wu et al.

While Echizen et al. and Powell et al. each variously meets a number of the limitations of the claimed invention, as pointed out more fully above, Echizen et al. and Powell et al. each fails to specifically teach that the relative intensity of the embedding into a group of successive frames is substantially identical or approximately similar, as variously required by claims 24-25.

Wu et al. teaches embedding an information pattern in video data (lines 1-3 in section 2.1 on page 381), wherein the relative intensity of the embedding is substantially the same or approximately similar for a plurality of successive frames (i.e., seg. i or seg. i+1 shown in Figure 1, for example; see the second paragraph in section 2.1 on page 381; the same data is hidden in each frame of a segment). Because this reduces frame jittering (first sentence of the second paragraph of section 2.1), it would have been obvious to use the same or similar relative intensity

Art Unit: 2621

to embed information into successive frames to reduce such jittering in the embedding of Echizen et al. and Powell et al.

Allowable Subject Matter

18. Claims 30, 32-34 and 36-37 are allowed.

5 19. Claims 5-6 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The following is a statement of reasons for the indication of allowable subject matter:

10 None of the prior art teaches or suggests locating the one or more regions of the video signal by randomly selecting frames of the signal, as required by claims 5 and 18, or specifying the dimensions of the one or more regions of the video signal, as stipulated by claims 6 and 20. The prior art also fails to teach or suggest that one or more frames be fully encoded relative to unmarked frames and that one or more frames be partially encoded relative to the fully encoded frames, as required by claim 30, or that one or more frames be fully encoded relative to
15 unmarked frames and that one or more frames be gradiently encoded relative to the unmarked frames and the fully encoded frames, as stipulated by claim 35.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee et al. teaches embedding watermarks in successive frames in a video signal.

20 Maes et al., Itoh et al., Shimizu and Ryan each teaches variously embedding watermarks in frames of a video.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Johns whose telephone number is (703) 305-4788. The examiner is normally available Monday through Friday, at least during the hours of 9:00 am to

Art Unit: 2621

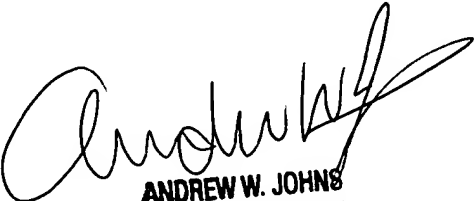
3:00 pm Eastern Time. The examiner may also be contacted by e-mail using the address: andrew.johns@uspto.gov. (Applicant is reminded of the Office policy regarding e-mail communications. See M.P.E.P. § 502.03)

5 If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached on (703) 305-4706. The fax phone number for this art unit is (703) 872-9306. In order to ensure prompt delivery to the examiner, all unofficial communications should be clearly labeled as "Draft" or "Unofficial."

10 Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center Receptionist whose telephone number is (703) 305-4700.

15

A. Johns
3 August 2004



ANDREW W. JOHNS
PRIMARY EXAMINER